400 associated with the transmitter match the properties of the filtering apparatuses 416b in array 400b associated with the detector. For example were the filtering apparatuses 416 associated with transmitter 312a to match the properties of filtering apparatuses 216b associated with detector 314c, the optical energy produced by transmitter 312a could be sensed by detector 314c. Assume no other detector has filtering apparatuses 416b associated therewith that have properties matching the properties of the filtering apparatuses 416 associated with transmitter 312a. Then detector 314c would be the only detector of array 314 capable of sensing optical energy from transmitter 312a. This results from the inherent properties of holographic transforms, discussed more fully below. It should be seen that in addition to filtering, the holographic transform provides security against unauthorized sensing of optical energy. In this manner, information modulated on the optical energy produced by transmitter 312a may only be perceived by detector 314c. This is also discussed more fully below.

REMARKS

Amendments were made to the drawings and specifications resulting from the bifurcation of Fig. 10 into Figs. 10A and 10B. The specification was amended to reflect the new numbering of Fig. 10 and to harmonize the written specification with the drawings. No new matter has been introduced as a result of these amendments and the same was not necessitated to overcome prior art.

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Applicant respectfully contends that the application is in condition for allowance. A notice of allowance is earnestly requested.

CERTIFICATE OF MAILING

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Signed: Kenneth C. Brooks

Typed Name: Kenneth C. Brooks

Date: December 18, 2001

Respectfully submitted,

Kenneth C. Brooks

Kenneth C. Brooks
Reg. No. 38,393

B

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Robert Mays, Jr.
Serial No: 09/851,856
Filed: May 9, 2001
For: FILTERING TECHNIQUE FOR FREE SPACE COMMUNICATION

PATENT APPLICATION
Group Art Unit: 2633
Examiner: Payne, D.

CHART OF AMENDMENTS

Commissioner
for Patents
Washington, D.C. 20231

Sir:

In response to a Notice of Non-Compliant Amendment mailed November 6, 2001, Applicant provides this Chart of Amendments in connection with a Supplemental Preliminary Amendment filed in the above-identified patent application. The Chart of Amendments show the locations of amendments made to the application.

IN THE SPECIFICATION:

[Fig. 10] Figs.10A and 10B is perspective view of the communication system shown above in Fig. 1, in accordance with an alternate embodiment;

Fig. 11 is perspective view of an array of the filters fabricated on a photo-sheet shown above in **[Fig. 10]** Figs.10A and 10B;

Fig. 12 is a cross-sectional plan view of the optical communication system shown above in **[Fig. 10]** Figs.10A and 10B, in accordance with the present invention;

Referring to **[Fig. 10]** Figs.10A and 10B, beam-sensor discrimination provided by the present invention is beneficial to a multi-channel optical communication system 310. One example of optical communication system 310 includes an array 312 of optical transmitters, shown generally as 312a-312p, and an array 314 of optical detectors, shown generally as 314a –314p. The optical transmitters 312a-312p generate optical energy to propagate along a plurality of axes, and the optical receivers 314a-314p are positioned to sense optical energy propagating along one of the plurality of optical axes. Specifically,

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the array 312 is an (XxY) array of semiconductor lasers that produce a beam that may be modulated to contain information. The array 314 may comprise of virtually any optical detector known, such a charged coupled devices (CCD) or charge injection detectors (CID). In the present example, the array 314 comprises of CIDs arranged in an (MxN) array of discrete elements. The optical beam from the each of the individual emitters 312a-312p may expand to impinge upon each of the detectors 314a –314p of the array 314 if desired. Alternatively, the optical beam from each of the individual emitters 312a-312p may be focused to impinge upon any subportion of the detectors 314a –314p of the array 314, discussed more fully below. In this fashion, a beam sensed by one of the detectors 314a-314p of the array 314 may differ from the beam sensed upon the remaining detectors 314a-314p of the array 314. To control the wavefront of the optical energy produced by the transmitters 312a-312p, the filtering apparatus 16, discussed above with respect to Figs 1-8 may be employed as an array of the filtering apparatuses 416, shown more clearly in Fig. 11 as array 400.

Specifically, the filtering apparatus 316 may include an additional array 400b of filtering apparatuses 416b that match the pitch of the individual detectors 314a-314p of the array 314, shown more clearly in Fig. 13. The filtering apparatuses 416b may be fabricated to provide the same features as discussed above with respect to array 400, shown in **[Fig. 10]** <u>Figs.10A and 10B</u>.

Referring to **[Fig. 10]** <u>Figs.10A and 10B</u>, 11 and 13 each of the transmitters 312a-312p of the array 312 would then be uniquely associated to communicate with only one of the detectors 314a-314p of the array 314. In this manner, the transmitter 312a-312p of the array 312 that is in data communication with one of the one of the detectors 314a-314p of the array 314 would differ from the transmitters 312a-312p in data communication with remaining detectors 314a-314p of the array 314, forming a transmitter/detector pair that is in optical communication. Communication between the transmitter detector pair is achieved by having the properties of the filtering apparatuses 416 in array 400 associated with the transmitter match the properties of the filtering apparatuses 416b in array 400b associated with the detector. For example were the filtering apparatuses 416 associated with transmitter 312a to match the properties of

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filtering apparatuses 216b associated with detector 314c, the optical energy produced by transmitter 312a could be sensed by detector 314c. Assume no other detector has filtering apparatuses 416b associated therewith that have properties matching the properties of the filtering apparatuses 416 associated with transmitter 312a. Then detector 314c would be the only detector of array 314 capable of sensing optical energy from transmitter 312a. This results from the inherent properties of holographic transforms, discussed more fully below. It should be seen that in addition to filtering, the holographic transform provides security against unauthorized sensing of optical energy. In this manner, information modulated on the optical energy produced by transmitter 312a may only be perceived by detector 314c. This is also discussed more fully below.

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Signed: Kenneth C. Brooks

Typed Name: Kenneth C. Brooks

Date: December 18, 2001

Respectfully submitted,

Kenneth C. Brooks

Kenneth C. Brooks
Reg. No. 38,393

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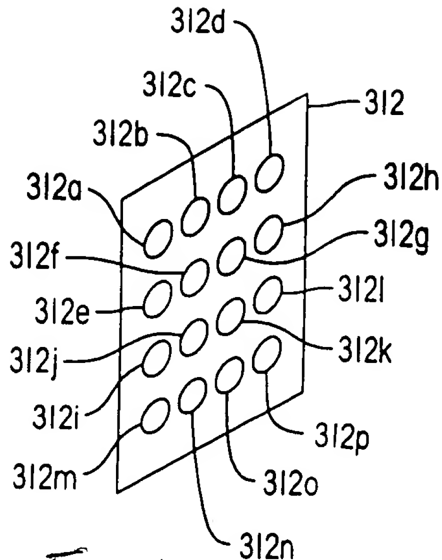

Fig. 10A

~~FIG. 10~~

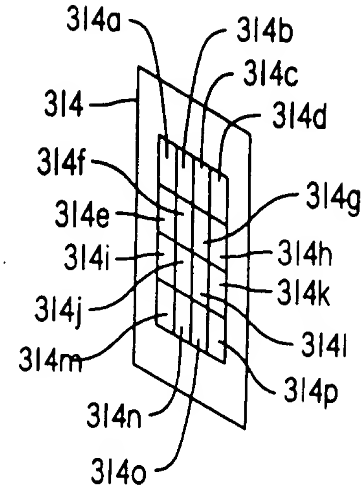

Fig. 10B

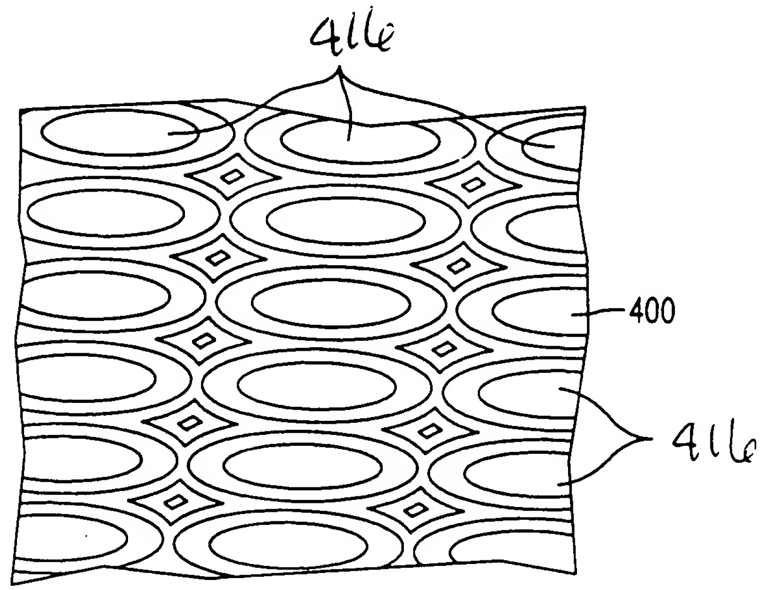

FIG. 11

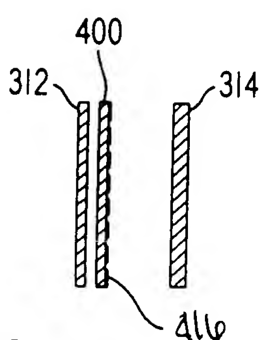

FIG. 12

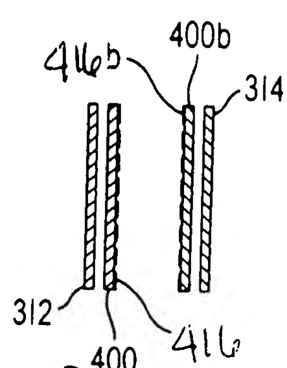

FIG. 13